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ABSTRACT

Based on the National Longitudinal Surveys of Young Women aged fourteen to twenty-four in 1968, a study was made to determine the impact that women's ex ante labor market expectations have on their salary and development and to examine the effect of women's postschool training and maturation (human capital accumulation) on wages. Six findings resulted from analysis of the empirical evidence: (1) the emphasis that young white women place on on-the-job training is positively related to their expected work attachment; (2) of the two types of training, specific and general, only the investment in general training is affected by future work expectations; (3) postschool investment in on-the-job training is a major factor in wages and wage growth among young women; (4) although maturation plays an important role in wage growth, its importance declines with age, and its effect is smaller for women than men; (5) significant racial differences exist in wage determination; and (6) young women tend to underestimate the length of their future work life, so some therefore may underinvest in on-the-job training. The incorrect expectations of women regarding the extent of their participation in the labor force were found to account in part for the existing gap between female and male wages. (EIG)

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Steven H. Sandell and David Shapiro

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Work Expectations, Human Capital Accumulation,
and the Wages of Young Women*

In studying the earnings of women, a key hypothesis of the human capital school is that the expected shorter period of lifetime labor force attachment associated with child-rearing results in smaller human capital investments among women. This proposition frequently underlies statements in the literature that sex differences in future work expectations are an important determinant of existing male-female differences in wage rates and occupational advancement.[1] The hypothesis has been tested indirectly, making use of the theoretical relationship between the unobserved investments in on-the-job training and observed experience-earnings profiles.[2] That the profiles for women were flatter than for men, and those for married women flatter than for unmarried women, was consistent with the theoretical implications.

While lifetime labor force expectations and their impact on occupational choice and earnings have been an important focus of a number of studies, the lack of ex ante measures of expectations has precluded direct testing of the nexus between investment decisions and the individual's time horizon. Empirical investigators have been forced to use marital status, number of children, or proportion of years since marriage worked six or more months as proxies for expectations.[3] It is clear that these proxy measures are highly imperfect substitutes for work intentions. Since almost all young women expect to marry and usually have two children, the first two measures are inappropriate.[4] Actual work experience is an ex post measure that introduces simultaneity bias vis-a-vis labor supply and human capital accumulation.

In this paper, the National Longitudinal Surveys (NLS) of Young Women aged 14 to 24 in 1968 are used to estimate the impact that these women's ex ante labor market expectations have on their human capital accumulation and pay.[5] In addition to directly testing the effects of ex ante expectations, we also distinguish and estimate the effects of several forms of postschool human capital accumulation. Numerous studies have examined human capital accumulation via on-the-job training and via aging (maturation).[6] Here, equations are estimated that separate the effects of on-the-job training into general and firm-specific components. In effect, then, we examine three forms of postschool human capital accumulation among young women--general training, specific training, and maturation.

The principal findings of this study are:

(1) Ex ante expectations of future labor force attachment are significantly related to rates of postschool human capital accumulation among young white working women. The empirical evidence thus supports the human capital hypothesis that receipt of on-the-job training is positively related to expectations of future labor force attachment.

(2) When investment in on-the-job training is decomposed into general and specific human capital components, it is apparent that the significant effects of expectations on investment in on-the-job training are confined to investment in general training. Investment in firm-specific training is unaffected by future work expectations.

(3) The combined effects of general and specific training indicate that postschool investments in on-the-job training are a major determinant of wages and wage growth among young women.

(4) Aging plays an important independent role in wage growth among whites. However, the importance of maturation declines with age. At age 18 a year of aging implies wage growth of nearly 6 percent, while at age 25 the partial effect of age on the hourly wage rate is zero. In addition, the maturation effect is smaller for women than for men.

(5) Consistent with previous work, significant racial differences in wage determination are found to exist. The South/nonSouth differential is much larger for blacks than for whites. Furthermore, government employment and collective bargaining coverage are found to be positively related to young women's wage rates.

(6) Comparison of the actual labor force attachment of mature women with the expectations of future participation of young women indicates that young women (as a group) tend to underestimate considerably their future labor force attachment. This implies that some young women may underinvest in on-the-job training. If women currently working have also underestimated the extent of their actual labor force participation, their incorrect expectations account for part of the present male-female wage gap.

The following section focuses on the role of expectations in influencing the process of human capital accumulation through on-the-job training. Theoretical and empirical distinctions between general and specific on-the-job training are discussed. In Section II, wage equations are estimated for young women making use of interaction terms that stratify according to whether or not they are "strongly attached" to the labor force. This estimation allows us to test the clear implication of human capital theory that individuals with stronger expected lifetime

attachment to the labor force will invest more heavily in on-the-job training. The evidence supports this hypothesis, and the wage equations are then used to generate estimates of the magnitude of the effect of expectations on human capital accumulation and wage rates. The implications of women's often incorrect expectations about their future labor force participation are discussed in Section III. Comparisons between the labor market expectations and experience of young and mature women are also presented in this section.

I EXPECTATIONS AND ON-THE-JOB TRAINING: THEORETICAL AND EMPIRICAL CONSIDERATIONS

Once schooling is completed, a major portion of subsequent human capital accumulation is accomplished through on-the-job training. Since pecuniary returns to investment in training can be reaped only so long as the individual remains at work in the labor force, the expectation of periods of withdrawal from the labor market has the effect of lowering the expected gain from investment in training, thus reducing early postschool investments in training.[7] To the extent that there are substantial differences in lifetime labor force attachment among women, the human capital model implies that women with stronger labor force attachment will engage in postschool human capital investment more heavily than women with weaker labor force attachment.

In the initial NLS of young women in 1968, respondents were asked: "Now I would like to talk to you about your future plans. What would you like to be doing when you are 35 years old?" We assume that responses to this question reflect plans (expectations) for the future, as well

as preferences.[8] In the context of the discussion above, those young women who indicated in 1968 that they would like to be working in the market at age 35 are viewed as expecting to have greater attachment to the labor force over the life cycle than those young women expressing no desire to work in the market at age 35. According to human capital theory, then, investment in on-the-job training should be greater among the women in the former (more strongly attached) group.[9]

A well known consequence of greater investment in on-the-job training is an experience-wage profile that begins at a lower point and is more steeply sloped. The human capital interpretation of experience-wage profiles is concerned with on-the-job training paid for by the worker through reduced wages in the early years, and resulting in increased productivity and higher wages in the later years. Two such types of training have been discussed in the literature: general training and firm-specific training.

In examining an individual worker's incentive to invest in on-the-job training, an important consideration is the length of the individual's relevant time horizon for investment. The longer is the investment horizon, the greater is the incentive to invest in training. For general training, the relevant time horizon consists of the worker's expected total lifetime experience in the labor market. Since women who plan to work at age 35 presumably have stronger expected lifetime labor force attachment than their "no-plans" counterparts, their experience-wage profiles should be steeper and start from a lower point. For firm-specific training, the relevant

investment horizon consists of the worker's expected tenure with the current firm. Questions from the NLS provide little insight into young women's expectations concerning prospective tenure with the current firm; consequently, we have no hypothesis about the effect of future work expectations on the incentive to invest in firm-specific training. Thus, we hypothesize that women with plans to work at age 35 will invest more heavily in general training than women with no plans for working at age 35. At the same time, we have no *a priori* hypothesis regarding possible differences by future work plans in investment in firm-specific training.

Empirically, exact measures of general and firm-specific training are never available. However, since general training is useful to many employers while firm-specific training is useful only to the employer providing the training, one can use total years of labor market experience as a proxy for general training and tenure with the current employer as a proxy for firm-specific training. In a wage equation controlling for both of these forms of work experience, the coefficient of total labor market experience measures the return to general training, since tenure on the current job is held constant. By the same token, the coefficient of tenure in this specification measures the return to firm-specific training, since the equation holds general experience constant.[10] Thus, the hypothesis that women with plans to work at age 35 will invest more heavily in general training implies that in wage equations which control for both total work experience and tenure, the experience-wage profiles

implied by the coefficient(s) of total work experience should be steeper and start from a lower point for the woman with such plans.

Operationally, this hypothesis is tested by estimating wage equations that include interaction terms for total work experience and plans to work and for the constant term and plans to work.[11] These interaction terms differentiate women who plan to work from those who do not, and within the equations they allow for differences between these two groups in the coefficients of work experience and the constant term (and hence, in the implied experience-wage profiles). Two variants of the wage equation have been estimated: in the first, work experience is measured simply by total postschool work experience; while in the second, both experience variables--total experience and current job tenure--are included in the equations. In both cases, quadratic specifications of the experience variables are used.

In light of the work of Lazear, it is important to consider the effects of nonmarket acquisition of human capital. Lazear has demonstrated that among young men, apart from the effects of schooling and work experience on wage growth, there is an independent effect of aging that presumably represents nonmarket acquisition of human capital. In order to insure that our estimates of the effects of on-the-job training are not biased by omission of variables that are proxies for nonmarket human capital accumulation, we control for age in the wage equations. Since Lazear's results indicate that the effect of aging on wage growth declines with age, a quadratic specification of age is used.

The estimated wage equation without tenure may be expressed as follows:

$$(1)\quad LNWAGE = \alpha_0 + \alpha_1 SCHOOL + \alpha_2 EXPER + \alpha_3 EXPER^2 + \alpha_4 PLW + \alpha_5 PLW \cdot EXPER + \alpha_6 PLW \cdot EXPER^2 + \alpha_7 AGE + \alpha_8 AGE^2 + \sum_{i=9}^{13} \alpha_i Z_i$$

where LNWAGE is the natural logarithm of the respondent's hourly wage rate in 1973 (in cents); SCHOOL measures the number of years of school completed; EXPER measures the respondent's total years of work experience in the labor market since last attended school full time; PLW is a dummy variable denoting those young women who expected (in 1968) to be working in the labor market at age 35; PLW·EXPER and PLW·$EXPER^2$ are interaction terms between the plans to work variable and total work experience and experience squared, respectively; and Z_i represents a set of control variables: dummy variables denoting workers employed in the public sector, those whose wages are set by collective bargaining, those who reside in an SMSA, reside in the South, and have health problems that limit the amount or kind of work they can do. The equations with tenure include four additional terms: tenure, tenure squared, and the corresponding interaction terms. In the context of equation (1), the hypothesis that wage-experience profiles will start at a lower point and be steeper for women who plan to work at age 35 implies that α_4 will be negative and α_5 will be positive.

II EMPIRICAL ESTIMATES

Wage equations for 1973 were estimated for those young women who reported their future plans in 1968 and who were out of school and employed as wage and salary workers at the time of the 1973 NLS survey. Separate equations were estimated for whites and blacks, and are presented in Table 1.[12] For each race, the estimate in the first column uses the total work experience measure alone, while that in the second column uses both total experience and current job tenure. The coefficients of total work experience and tenure measure the partial effect of these two types of work experiences on wages for young women with no plans to work at age 35. The corresponding effect for women who do plan to work can be obtained for each variable by summing the experience or tenure coefficient and the relevant interaction term coefficient.[13]

The estimated effects of the work experience variables by plans to work and by race are shown in Table 2. As implied by the human capital hypothesis, the experience-wage profiles for those young women who plan to work at age 35 begin at a lower point and have a steeper (initial) slope than those of their "no work plans" counterparts.[14] The intercept terms are significantly different among whites and nearly so among blacks, implying that young women with future work plans have starting wage rates approximately 10 percent lower than those of women without future work plans, ceteris paribus. Differences in the initial steepness of the profiles are significant among whites but not among blacks.

Table 1 Coefficients of Wage Equations with Interaction Terms, With and Without Tenure, by Race

(Dependent variable = LNWAGE)

Independent variables	WHITES				BLACKS			
	β	(t)	β	(t)	β	(t)	β	(t)
SCHOOL	.0797	(13.84)	.0776	(13.63)	.0575	(8.41)	.0528	(7.79)
EXPER	.0580	(4.06)	.0247	(1.50)	.0682	(3.53)	.0405	(1.94)
$EXPER^2$	-.0020	(-1.53)	-.0002	(-0.16)	-.0047	(-2.62)	-.0030	(-1.60)
TENURE	-	-	.0792	(4.89)	-	-	.0380	(3.25)
$TENURE^2$	-	-	-.0066	(-3.35)	-	-	-	-
AGE	.2138	(3.53)	.1967	(3.28)	-.0009	(-0.16)	-.0017	(-0.31)
AGE^2	-.0043	(-3.41)	-.0039	(-3.12)	-	-	-	-
GOVT	.0752	(2.80)	.0634	(2.39)	.1154	(3.64)	.1169	(3.76)
COLBAR	.1884	(7.19)	.1613	(6.12)	.1631	(5.67)	.1506	(5.31)
SMSA	.1211	(5.81)	.1258	(6.11)	.1383	(4.56)	.1383	(4.66)
SOUTH	-.0624	(-2.89)	-.0561	(-2.63)	-.2031	(-7.31)	-.2062	(-7.55)
HEALTH	-.0934	(-2.17)	-.1007	(-2.37)	-.1259	(-2.17)	-.1034	(-1.81)
PLW 68	-.1058	(-1.82)	-.0953	(-1.65)	-.0806	(-1.42)	-.0906	(-1.63)
PLW·EXPER	.0391	(1.65)	.0458	(1.73)	.0195	(0.79)	.0276	(1.05)
$PLW \cdot EXPER^2$	-.0028	(-1.35)	-.0032	(-1.45)	-.0010	(-0.46)	-.0022	(-0.94)
PLW·TENURE	-	-	-.0287	(-1.00)	-	-	-.0015	(-0.09)
$PLW \cdot TENURE^2$	-	-	.0036	(1.06)	-	-	-	-
Constant	1.6693	(2.39)	1.8671	(2.70)	4.6328	(32.48)	4.7143	(33.42)
$\bar{R}^2$	.347		.364		.453		.474	
S.E.E.	.348		.343		.275		.270	
F-ratio	53.42		44.20		35.57		33.32	
Sample size	1282		1282		502		502	

Table 1 Continued

Variable	Definition	WHITES		BLACKS	
		Mean	S.D.	Mean	S.D.
LNWAGE	Natural logarithm of the 1973 hourly wage rate (cents)	5.597	.430	5.487	.372
SCHOOL	Number of years of school completed	12.75	2.04	11.93	2.05
EXPER	Number of years worked six months or more since last attended school full time	4.17	2.67	4.00	2.90
$EXPER^2$	Square of EXPER	24.49	29.86	24.45	32.12
$TENURE_2$	Number of years worked on current job	2.00	2.08	1.85	1.85
$TENURE^2$	Square of TENURE	8.34	16.84	6.85	12.84
AGE	Age in years as of 1973 survey date	23.62	2.90	23.90	2.87
AGE^2	Square of AGE	566.51	138.70	579.26	138.50
GOVT	Dummy variable equal to one if respondent is employed in the public sector, otherwise equal to zero	.20	.40	.23	.42
COLBAR	Dummy variable equal to one if respondent's wages are set by collective bargaining, otherwise equal to zero	.19	.39	.29	.45
SMSA	Dummy variable equal to one if respondent resides in a Standard Metropolitan Statistical Area, otherwise equal to zero	.64	.48	.75	.44
SOUTH	Dummy variable equal to one if respondent resides in the South, otherwise equal to zero	.33	.47	.60	.49
HEALTH	Dummy variable equal to one if respondent has health problems that limit the amount or type of work she can do, otherwise equal to zero	.06	.23	.05	.21
PLW 68	Dummy variable equal to one if respondent indicated in 1968 that she planned to work at age 35, otherwise equal to zero	.27	.45	.53	.50
$PLW \cdot EXPER_2$	Interaction term--product of PLW68 and $EXPER_2$	1.14	2.35	2.12	2.98
$PLW \cdot EXPER^2$	Interaction term--product of PLW68 and $EXPER^2$	6.82	20.44	13.37	28.08
$PLW \cdot TENURE_2$	Interaction term--product of PLW68 and $TENURE_2$	.54	1.40	1.01	1.70
$PLW \cdot TENURE^2$	Interaction term--product of PLW68 and $TENURE^2$	2.25	9.92	3.91	11.12

Table 2 Coefficients Relating LnWage to Experience Variables and the Intercept by Plans to Work at Age 35 and by Race[a]

	WHITES			
	Specification including tenure		Specification without tenure	
	Plan to work	No work plans	Plan to work	No work plans
$EXPER_1$	.0705	.0247	.0972	.0580
$EXPER^2$	-.0034	-.0002	-.0048	-.0020
$TENURE_1$	.0504	.0792	-	-
$TENURE^2$	-.0030	-.0066	-	-
Constant	1.7718	1.8671	1.5636	1.6693

	BLACKS			
	Specification including tenure		Specification without tenure	
	Plan to work	No work plans	Plan to work	No work plans
$EXPER_1$	.0681	.0405	.0877	.0682
$EXPER^2$	-.0051	-.0030	-.0057	-.0047
$TENURE_1$	.0365	.0380	-	-
$TENURE^2$	-	-	-	-
Constant	4.6237	4.7143	4.5522	4.6328

a Coefficients are derived from regression equations reported in Table 1.

As noted earlier, we also tested to see if future work expectations influence investment in firm-specific training. The evidence from the wage equations that include tenure indicates that there is no significant effect of expectations on investment in firm-specific training. In addition, once tenure is explicitly controlled, the effect of total work experience on wages becomes considerably greater, relatively, for women who plan to work compared to women who do not plan to work.

The empirical evidence thus indicates that young women with greater expected lifetime attachment to the labor force do invest more heavily in general on-the-job training. Table 3 focuses on the impact of on-the-job training on wage rates. More precisely, the table shows the estimated (percentage) contributions of postschool work experience to the wage rates of young women workers in 1973. These contributions are determined by multiplying the mean values of total work experience and tenure by their corresponding regression coefficients and summing.

Table 3 Estimated Effects of Work Experience on Wage Rates, by Plans To Work at Age 35

Sample	Source of estimate	Relative contribution to wage rates of mean post-school work experience					
		Specification without tenure		Specification including tenure			
				General training		Specific training	
		No plans	Plans	No plans	Plans	No plans	Plans
Whites		.21	.32	.10	.23	.13	.09
Blacks		.20	.26	.11	.19	.07	.07

It is clear from Table 3 that investments in general and specific training are important determinants of wages and wage growth among young women. In addition, the contribution of mean work experience to (the log of) the wage rate is distinctly higher for women who plan to work than for those who do not plan to work at age 35. This conclusion holds in the specification without tenure, and it is even more striking in the specification that controls for the effects of job tenure. For example, the specification without tenure indicates that a white women with average (total) experience and no work plans will earn a wage that is 21 percent higher than that of a woman with no work experience, while a woman with average experience who plans to work will earn a wage that is 32 percent higher than that of her new entrant counterpart. By comparison, the specification that includes tenure implies that women who do not plan to work have wages that are 10 percent higher due to general training, as compared to 23 percent higher for women who do plan to work. Thus, from this different perspective, it is clear that the empirical evidence supports the human capital hypothesis that work expectations are positively related to investment in general on-the-job training.

The wages of young women are also affected by their off-the-job acquisition of human capital. Since total experience and tenure are held constant in the wage equations, the coefficients for whites of age and age squared indicate the effect of nonmarket human capital on the hourly rate of pay.[15] For an 18 year old white woman, an additional year of age implies nearly a 6 percent increment in the hourly wage,

ceteris paribus. By age 25, however, the partial effect of age on wages has fallen to zero. This result is consistent with Lazear's findings that among young men aging is a significant determinant of wage growth, the importance of which declines with age. While the effect of aging on wage growth shows similar patterns for both sexes, the magnitudes are distinctly higher for men. For example, Lazear reports upper bound estimates of the effect of aging on wage growth of young men that are in excess of 9 percent for 19 year olds and nearly 6 percent for 24 year olds. The smaller wage-augmentation effect for women of off-the-job accumulation of knowledge[16] may reflect the fact that the life experiences and concerns of women differ from (and are perhaps less labor-market oriented than) those of men.[17]

The introduction of age as an explanatory variable in the wage equation for whites reduces the coefficient of total work experience by almost one-half, while the coefficient of the interaction term between plans to work and total experience increases slightly.[18] Thus, if age is not controlled for, the effect of on-the-job (general) training will be overestimated and the relative plans/no plans differential in experience coefficients will be understated.[19]

Racial differences in the effects on wages of work experience and expectations are apparent from Table 2. The initial wage augmentation effect (on a percentage basis) of general labor market experience is slightly higher for white than for black women who express plans to work at age 35. Among women who do not plan to work, the experience-wage profile is initially steeper for blacks. However, because of the

greater curvature of the profile for blacks, the partial effect of experience on wages evaluated at the mean of experience (just over four years) is greater for whites. In terms of the initial slopes of the experience-wage profiles, differences by expectations of future labor force attachment are greater among whites than among blacks.

Examination of the regression coefficients in Table 1 reveals further differences by race in the remaining determinants of wages. A year of schooling adds nearly 8 percent to the wage rate of a young white woman, ceteris paribus, while the corresponding effect for a black is roughly 5 to 6 percent. An approximate t-test reveals that the racial difference in schooling coefficients is statistically significant. The different magnitudes of the coefficients representing government employment and residence in the South are probably picking up vestiges of racial discrimination. The wage premium associated with employment in the public sector is approximately 6 percent for whites and nearly 12 percent for blacks. More dramatic is the significant difference by race in the South/nonSouth differential: blacks experience a 21 percent wage penalty if they work in the South compared to a 6 percent lower wage for Southern whites. Indeed, the most important determinant of the racial difference in the wages of young women is the fact that more blacks live in the South (three-fifths compared to one-third for whites) and they suffer a greater wage penalty when they do ($.51 compared to $.15).[20]

The lack of a significant aging effect for blacks is consistent with the hypothesis that racial discrimination in labor markets is

decreasing over time, resulting in better job opportunities for more recent black labor market entrants than for their slightly older counterparts.[21] The wage equations imply that for 27-year-old women with similar characteristics, the black-white wage ratio is .97 for those residing outside of the South and .83 for those living in the South, while for 21-year-old women with similar characteristics the corresponding figures are 1.10 and .94.[22] Hence, these estimates provide further evidence indicating that racial discrimination may have declined in recent years.

III INCORRECT EXPECTATIONS AND EMPLOYMENT PROBLEMS OF WOMEN

In view of the secular increase in labor force participation by married women, it is likely that many women currently working substantially underestimated, when they were younger, the extent of their lifetime labor force attachment. Since the evidence presented above indicates that low expectations of future labor force participation are concomitant with less investment in on-the-job training, this suggests that many women are faced with poor occupational opportunities when and if they decide to enter or return to the labor market. In addition, unrealistically low expectations of future participation can create a self-fulfilling prophecy if these little-trained women are offered low wages and, hence, choose not to accept employment.

The implications of women's work expectations for male-female wage differences are straightforward. Human capital analysis suggests that part of the wage gap between men and women is attributable to sex differences in investment in human capital. For persons currently

in the market, the higher wages of men than women are partly due to higher embodied postschool investments in human capital for men.[23] This is due in part to higher levels of postschool work experience for men (than for women of comparable age). In addition, human capital theory suggests that there will be greater investment per unit of experience for men than for women. Since (as we have shown) low expected future labor force participation is associated with less investment, it is likely that sex differences in youthful work expectations among today's older workers play an important part in determination of the contemporary male-female wage gap. Alternatively, if young women now have greater work expectations (and, eventually, higher labor force attachment) than their counterparts of a generation ago, this should result in increased wages for women and a narrowing of the male-female wage gap in the future. Not only will the wage gap narrow due to a secular increase in the amount of experience among the female labor force, but it will narrow further because future women workers will have expected to participate and thus they will have invested more in on-the-job training than today's working women.

Despite the apparent growth over time in women's work expectations, it seems likely that some young women still underestimate their future labor force attachment. In Table 4, the labor force expectations (at age 35) of the NLS cohort of young women are compared with the actual labor force experience of women aged 30 to 40 from the NLS cohort of mature women. In general, the table suggests that, as judged by the actual experience of older women, young women in all education groups

Table 4 Work Expectations at Age 35 of Young Women Compared to Actual Employment Status of Mature Women

	Education[d]				
	11 years or less	12 years	13 to 15 years	16+ years	Total
	WHITES				
% Young women expecting to work at age 35[a]	b	26.6	18.1	32.7	28.6
% Mature women in labor force[c]	45.1	45.1	43.6	54.7	45.9
	BLACKS				
% Young women expecting to work at age 35[a]	b	62.1	60.6	57.7	59.3
% Mature women in labor force[c]	62.5	67.1	79.0	95.1	67.1

a Source: National Longitudinal Survey of Women aged 14 to 24 in 1968. Excludes those answering "don't know," "not applicable," or "other."
b Excludes those answering educational attainment of 11 years or less.
c Respondents from the National Longitudinal Survey of Women 30 to 44 in 1967. For comparability, respondents over age 40 are excluded.
d Refers to expected educational attainment for young women, completed education for mature women.

underestimate their future labor force participation. To the extent that the secular increase in female labor force participation continues into the future, the underestimates are even greater than indicated in the table.[24] It is interesting to note that young black women appear to underestimate their future labor force participation less than their white counterparts. Young blacks predict a labor force participation rate of 59 percent compared to an actual rate for older blacks of 67 percent. Young whites predict, for age 35, a rate of 29 percent compared to an actual rate of 46 percent.

IV SUMMARY

This paper confirms directly for the first time the implication of human capital theory that young women's *ex ante* labor market expectations are significantly related to their postschool accumulation of human capital. This finding is particularly notable when it is recalled that this group is often assumed to undertake only limited investment in human capital. Separate empirical estimates of the effects on wages of general and specific on-the-job training as well as maturation are presented. The effects of expectations on on-the-job investment are apparent only for general training. Finally, the empirical evidence indicates that postschool investments in training are a major determinant of wages and wage growth among young women.

FOOTNOTES

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[1]For example, see George Johnson and Frank Stafford; Jacob Mincer and Solomon Polachek; Solomon Polachek; and Harriet Zellner.

[2]These models postulate a functional relationship between wages and human capital investment, the latter being the solution to the optimal control problem where the objective is to maximize discounted earnings over a finite work horizon.

[3]See, for example, Mincer and Polachek; Polachek; and Zellner.

[4]The ex post nature of marital status as a proxy for expectations has been noted by Sherwin Rosen. In addition, in response to a question concerning expected number of children, approximately three percent of respondents in the National Longitudinal Surveys of Young Women indicated that they expected to remain childless. A large majority of the respondents expect to bear at least two children.

[5]For a complete description of these data, see Center for Human Resource Research.

[6]On-the-job training has been examined extensively by Mincer (1962, 1974) among others, while the effects of aging on wage growth of young workers has been analyzed recently by Edward Lazear.

[7]For a rigorous discussion of the effects of discontinuous participation on human capital investment, see Polachek.

[8]Clearly, the validity of this measure cannot be verified until the women reach age 35. However, we tested the measure using a cross-section

labor force participation equation. After controlling for schooling, husband's income, presence of young children, and age, the desire to work at age 35 reported in 1968 was found to be significantly related to labor force participation of white married women in 1973.

[9]Since some of the women were out of school in 1968 when they indicated their plans to work at age 35, it is possible that their labor market intentions were tainted by actual experience in the labor force. Consequently, supplementary analyses were done in which the samples were restricted to women who were still in school in 1968. The implications of these analyses regarding the effects of expectations on postschool human capital investments were similar to those of the analyses reported below. We have reported estimates for the less-restricted samples because they contain some women with longer labor force experience, resulting in greater variation in the key independent variable in the model.

[10]An alternate perspective on this specification is provided by considering the effects of current and previous work experience on wages. A year of experience with the current employer will be associated with investment both in general and in firm-specific training; consequently, the return to current experience is given by the sum of the experience and tenure coefficients. A year of experience obtained prior to the period of employment with the current firm also presumably involved investment in both general and firm-specific training. However, as the concept of firm-specific training implies, once a worker leaves the firm that provided such training the worker no longer receives returns on that investment. Hence, in considering the effects of training relevant to productivity (and wages) on the current job, it is only the general training acquired on previous jobs that matters. Consequently, the return to previous work experience is given by the coefficient of total labor market experience.

[11]Interaction terms for tenure and plans to work were also included to test for possible differences in specific human capital accumulation associated with future work expectations.

[12]Chow tests performed on identically-specified equations indicated that the wage structures differed significantly by race. The separate equations for each race reported below differ in the specifications of tenure and age. Squared terms for these two variables in the black equations do not add anything to the equations, and removal of these terms does not materially affect the remaining coefficients of interest.

[13]The t-values on the interaction terms measure the level of significance of the differences in coefficients between the "plans" and "no plans" groups. An implicit assumption here is that the

coefficients of the other variables in the wage equations do not differ by plans to work. A formal test indicated that with the exception of the age coefficients, this assumption is supported by the data--i.e., when interaction terms were included for all variables in the wage equations, there were no significant differences by plans to work in the coefficients of schooling or in any of the control variables.

[14]It might be argued that the differences in profiles by plans to work reflect greater ability rather than greater investment in training by the women with expectations of future market work. Equations that explicitly control for ability (IQ) have been estimated, and the differences in experience-wage profiles by plans to work implied by these equations are similar to those reported here. IQ is omitted from the reported equations because a high nonresponse rate for this variable would necessitate using a substantially smaller and potentially biased sample. In the same vein, we tested for and did not find any significant schooling-experience interaction effect.

[15]Among blacks, a quadratic specification of age (not reported here) yielded insignificant coefficients with reverse signs from those for whites. See text below for further discussion.

[16]We are assuming here that the true effects of aging on wage growth of young men are closely approximated by Lazear's upper bound estimates (i.e., that Lazear's wage shift parameter reflecting nonmeasured cohort and business cycle effects is very close to one).

[17]For example, peer discussions among young women might be concerned more with household and family activities, while those of men might be more related to occupational and job search activities. Another explanation, suggested to us by Professor Myra Strober, is the possibility of some perceived dimunution of attractiveness for women after their early 20's which is translated into slower wage growth.

[18]We are comparing the equation that controls for tenure in Table 1 with an unreported equation that is identical except that the age and age squared terms are omitted. The tenure coefficients are virtually unaffected by the introduction of age.

[19]Including a plans-age interaction term as well as a dummy variable for plans to work and a plans-experience interaction term in the same equation was precluded by high collinearity among these terms.

[20]The geometric mean wage rates of our two samples are $2.42 for blacks and $2.70 for whites. The wage equation for blacks implies that

a young (black) woman from the South who is "average" in all other respects will be paid a wage of $2.22, while an identical woman from outside of the South will be paid $2.73. Among whites, the corresponding figures are $2.60 and $2.75, respectively. Black-white differences in the coefficients for years of school and residence in the South may reflect discrimination in labor markets, racial differences in the quality of schooling, or a combination of the two.

[21]See, for example, Richard Freeman; Robert Hall and Richard Kasten; Joan Gustafson Haworth, James Gwartney and Charles Haworth; and Finis Welch.

[22]The reported ratios represent in each case a predicted wage for blacks divided by a predicted wage for whites. These predicted wages are derived from the wage equations in Table 1 that control for tenure. All calculations are for women with 12 years of schooling who are healthy, nonunion, private sector workers residing in an urban area. For those aged 21, we imputed two years of total work experience and one year of tenure; while for those aged 27 total experience and tenure were assumed to be six and three years, respectively. Whether or not the women expected to work at age 35, while affecting the predicted wage level, did not materially affect the black-white ratio.

[23]Clearly, labor market discrimination is likely to affect current decisions to participate, future work expectations, and investment in human capital. For example, in discussing sex differences in occupational distributions, Barbara Bergmann and Irma Adelman have argued that, "The fact that women in the past have not trained for or applied for [men's] jobs has been due more to women's realism about the prospects for payoff of such training or applications than to women's voluntary embrace of a benign 'role differentiation'" (p. 510).

[24]Data on declines in fertility behavior and expectations over the past 10-15 years suggest that the secular increase in participation is likely to continue. For example, in 1970 women aged 35-39 had an average of 3.0 children, while when these women were 25-29 they had borne 2.0 children on average. By contrast, women aged 25-29 in 1975 had borne just under 1.4 children. Similarly, in 1967 wives aged 30-39 expected to bear an average of 3.3 children and wives in their twenties expected 2.9-3.0 children; while by 1974 wives in their twenties expected 2.2-2.3 children. Data on fertility behavior are provided in U.S. Bureau of the Census, 1976; data on fertility expectations are from U.S. Bureau of the Census, 1975.

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The Center has acquired pre-eminence in the fields of labor market research and manpower planning. The National Longitudinal Surveys of Labor Force Behavior have been the responsibility of the Center since 1965 under continuing support from the United States Department of Labor. Staff have been called upon for human resource planning assistance throughout the world with major studies conducted in Bolivia, Ecuador and Venezuela, and recently the National Science Foundation requested a review of the state of the art in human resource planning. Senior personnel are also engaged in several other areas of research including collective bargaining and labor relations, evaluation and monitoring of the operation of government employment and training programs and the projection of health education and facility needs.

The Center for Human Resource Research has received over one million dollars annually from government agencies and private foundations to support its research in recent years. Providing support have been the U.S. Departments of Labor, State, and Health, Education and Welfare; Ohio's Health and Education Departments and Bureau of Employment Services; the Ohio cities of Columbus and Springfield; the Ohio AFL-CIO; and the George Gund Foundation. The breadth of research interests may be seen by examining a few of the present projects.

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(Continued on inside of back cover)

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